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[54] **SIMULATED VEHICLE ALARM**

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[52] **U.S. Cl.** **340/426**; 340/691.2; 340/693.8; 340/815.45; 362/800; 307/10.8

[58] **Field of Search** 340/425.5, 426, 340/815.45, 691, 693, 438, 457, 457.2, 428, 429; 362/61, 800; 307/10.8

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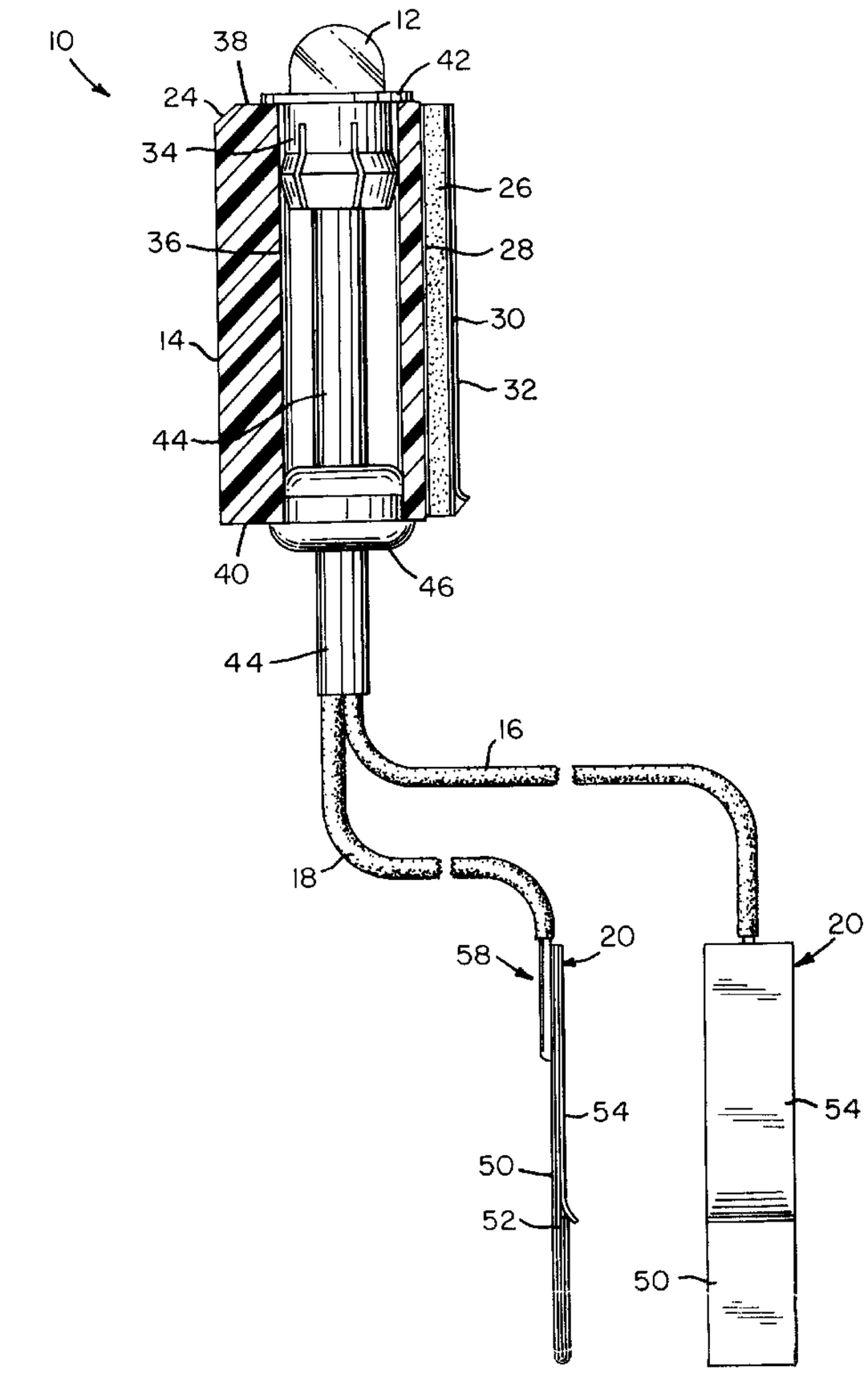
Attorney, Agent, or Firm—Stephen R. Greiner

[57] **ABSTRACT**

A simulated vehicle alarm including a housing formed of an electrically insulative material. A light-emitting diode is secured to the housing. A pair of electrically conductive leads are connected to the light-emitting diode and extend therefrom. A pair of electrical connectors are attached, respectively, to the free ends of the leads. Each of the connectors includes a strip of metallic foil having an adhesive layer applied to one of its sides. A strip of double-sided foam tape is secured to the housing for adhesively mounting the housing upon a supporting surface such as a vehicle windshield.

12 Claims, 1 Drawing Sheet



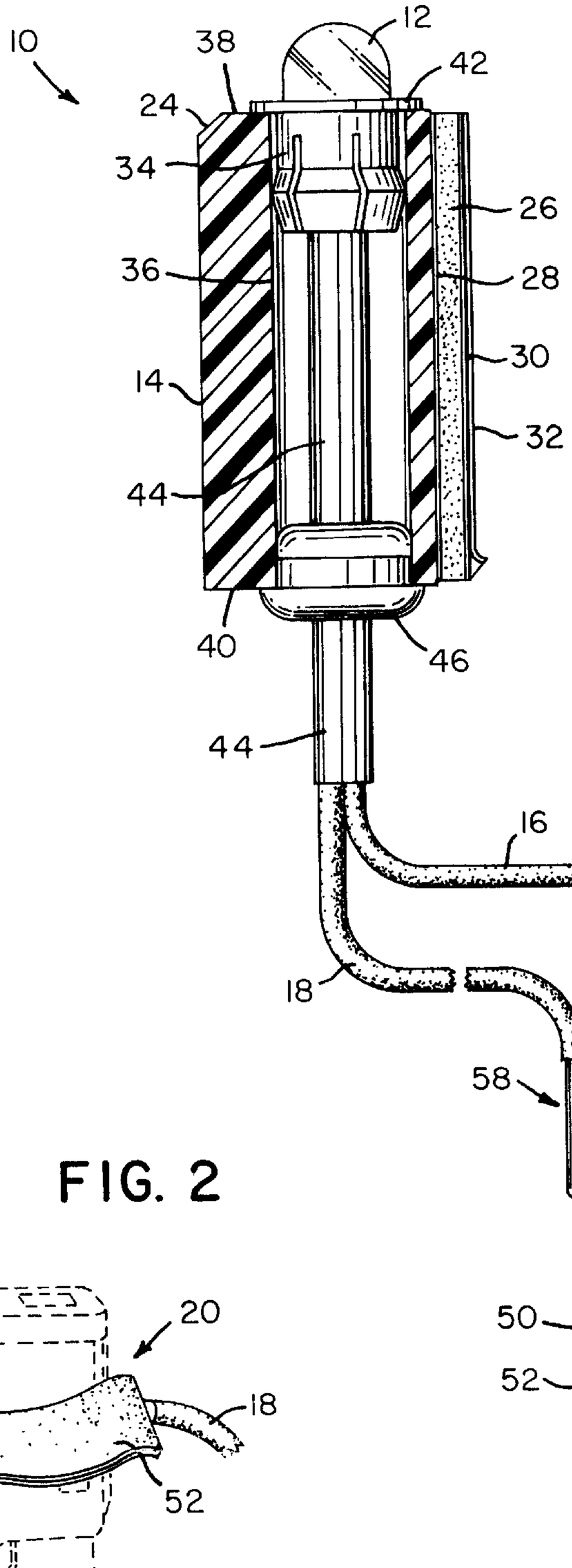

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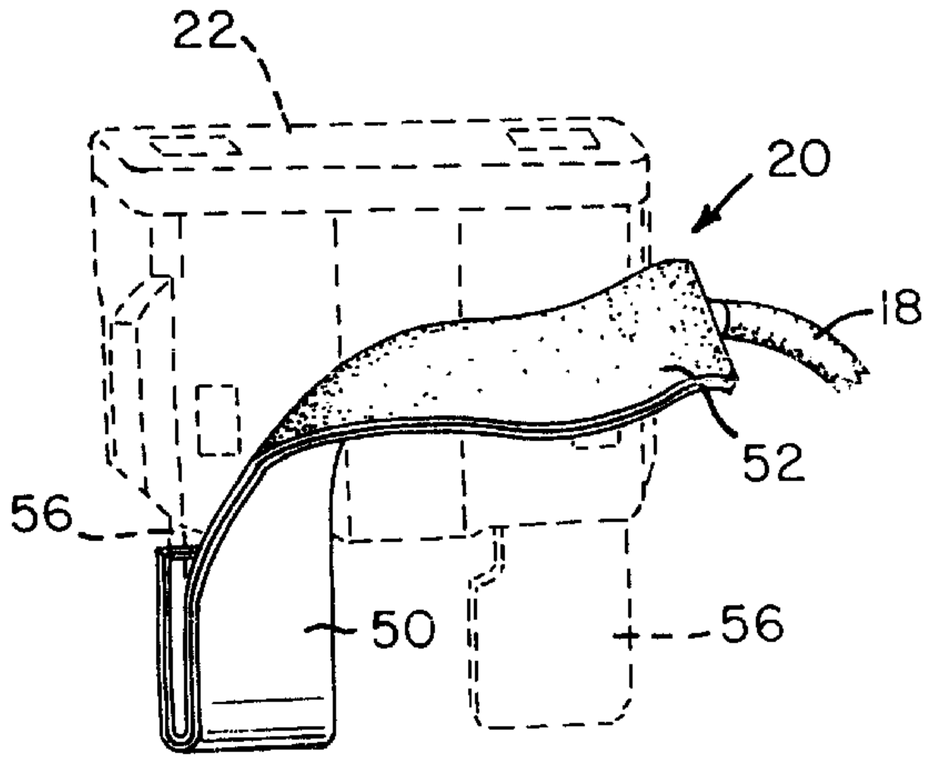
FIG. 1

FIG. 2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SIMULATED VEHICLE ALARM

FIELD OF THE INVENTION

The present invention relates generally to land vehicle alarms and indicators of burglary or unauthorized use.

BACKGROUND OF THE INVENTION

Electronic security systems for safeguarding vehicles are now commonplace. Such systems typically include motion sensors and other costly circuitry which detect entry into the vehicle and then sound an audible alarm. Experienced automobile thieves, however, are not deterred by these systems since they have developed techniques for rapidly overriding or disabling them.

Interestingly, most vehicle security systems available today include at least one flashing indicator light mounted in a position to alert passersby that the system is armed. It is believed by many that this light alone plays a significant roll in encouraging amateur thieves to proceed past the vehicle and pursue other quarry. Unfortunately, installing a vehicle security system having even one indicator light is time-consuming, requires permanent modification of the vehicle, and is prohibitively expensive for many individuals. A need, therefore, exists for an apparatus capable of deterring the unauthorized entry into vehicles of all sorts which is affordable by most individuals and is easy to install.

SUMMARY OF THE INVENTION

In light of the problems associated with the prior art vehicle alarm systems, it is a principal object of the invention to provide a simulated vehicle alarm having the external appearance of a flashing indicator light mounting structure found in a real vehicle alarm but is easy to install, requires no modification of a vehicle during installation, is fully automatic in its operation, and requires minimal electrical current to energize.

It is an object of the invention to provide improved elements and arrangements thereof in a simulated vehicle alarm which is lightweight, inexpensive, and dependable.

Briefly, the simulated vehicle alarm in accordance with this invention achieves the intended objects by featuring a housing with a light-emitting diode secured to it. A pair of leads extend from the light-emitting diode and have connectors at their free ends. The connectors include strips of metallic foil tape which may be attached, for example, to fuses forming part of an electrical circuit in a vehicle to energize the light-emitting diode. A strip of double-sided foam tape is secured to the housing for adhesively mounting the housing upon a supporting surface such as a vehicle windshield.

The foregoing and other objects, features and advantages of the present invention will become readily apparent upon further review of the following detailed description of the preferred embodiment as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may be more readily described with reference to the accompanying drawings, in which:

FIG. **1** is a side view of a simulated vehicle alarm in accordance with the present invention having portions broken away to reveal details thereof.

FIG. **2** is an perspective view showing an electrical connector of the simulated vehicle alarm being adhesively attached to a conventional vehicle fuse.

Similar reference characters denote corresponding features consistently throughout the accompanying drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the FIGS., a simulated alarm for use in boats, automobiles and like vehicles is illustrated at **10**. The simulated alarm **10** includes at least one light-emitting diode (LED) **12** secured to a housing **14**. A pair of electrical leads **16** and **18**, operatively connected to the LED **12**, extend outwardly from the housing **14**. The free ends of the leads **16** and **18** have electrical connectors **20** which may be attached to blade-type fuses **22** used in a vehicle to prevent electrical circuit overloads. Upon insertion of the fuses **22** into the vehicle's fuse box (not shown) with the connectors **20** attached, the LED **12** may be energized to simulate the appearance of a real alarm system component.

To discourage unauthorized individuals from tampering with a vehicle equipped with the simulated alarm **10**, it is important that the simulated alarm replicate the external appearance of an indicator light mounting structure being a part of a conventional vehicle alarm. Thus, it has been found that the housing **14** should comprise an elongated block formed of a thermoplastic or other polymeric material. Preferably, the housing **14** has a length of about 1", a width of about ½" and a height of about ½". To further enhance the simulative appearance of the housing **14**, and reduce the amount of material required to form it, bevels may be provided along its exterior as at **24**.

A pad of double-sided foam tape **26** is secured by means of its adhesive layer **28** to one side of the housing **14**. Prior to use, the adhesive layer **30** of the tape **26** facing away from the housing **14** is covered by a protective release liner **32**. Tape of this type is commercially available and offers not only excellent adhesion to curved surfaces such as automobile windshields under extremes in temperature and humidity but, also, somewhat absorbs shocks.

A mounting clip **34** receives the LED **12** and frictionally retains such within a longitudinal bore **36** extending between the opposed end walls **38** and **40** of the housing **14**. The LED **12** extends outwardly from the bore **36** and its distal end is maintained by a shoulder **42** on the clip **34** approximately ⅛" from the end wall **38**. This outward extension permits the LED **12** to be readily seen by passersby when illuminated.

The LED **12** preferably contains an integrated flasher/oscillator circuit which causes it to blink or flash in a manner similar to that of a conventional vehicle alarm's indicator light. To further enhance the visibility of the LED **12**, its body may be provided with a red color. Many manufacturers of electronic equipment produce LEDs of this type. One LED found adequate for use in the instant invention, however, is model no. L56-BID, distributed by Kingbright Corporation, U.S.A., City of Industry, Calif.

A pair of insulated electrical leads **16** and **18** extend from the LED **12**, through the bore **36**, and outwardly from the housing **14**. Although the electrical leads **16** and **18** may be provided with practically any length, 48" has been found to be more than adequate for installation of the simulated alarm **10** within, for example, an automobile. In an automobile, the preferred 48" length of the leads **16** and **18** permits the housing **14** to be mounted on the windshield with the LED **12** being connected to the fuse box typically located under the automobile's dashboard.

After the leads **16** and **18** are soldered to the LED **12**, a protective sleeve **44**, comprising a segment of heat-shrink tubing, is secured over a portion of their length. The pre-

ferred sleeve **44** is about 1½" in length and extends from the LED **12** through the longitudinal bore **36** to a point closely adjacent the end wall **40**. The sleeve **44** deters moisture from reaching the LED **12** and resists chemical and fungal attack.

A resilient grommet **46** is partially fitted within the longitudinal bore **36** adjacent the housing end wall **40**. The grommet **46** snugly supports within its central opening the leads **16** and **18** covered by the sleeve **44**. As would be expected, the grommet **46** prevents moisture and deleterious material from entering into and collecting within the housing **14**. It should be noted, however, that the grommet **46** does not provide stress relief to the leads **16** and **18** but such is not a great concern because the leads are not subjected to significant tensile loads during normal use of the simulated alarm **10**.

An electrical connector **20**, comprising a strip of metallic tape, is soldered to the free end of each of the leads **16** and **18**. The tape includes a strip of metallic foil **48** having an adhesive layer **50** applied to one of its sides. Preferably, the connector **20** is 3/16" in width by 1¼" in length to facilitate its attachment to a fuse **22** or any other electrical current source. (To reduce the length of the connector **20**, its free end may be folded back upon itself as shown in FIG. **1**.) Prior to the attachment of the connector **20**, a protective release liner **54** covers the adhesive **52**.

The 3M Company of St. Paul, Minn., distributes a copper foil tape in rolls and sheets which may be readily utilized to form the connectors **20**. The preferred 3M tape includes a strip of copper foil that is 5 mil thick bearing a layer of adhesive. Tape with this insignificant thickness will not cause a fuse to bind when being reinserted into a fuse box. The adhesive layer offers little electrical current resistance, permits the tape to be releasably secured to electrical conductors under a variety of conditions, and is vibration resistant.

As illustrated in FIG. **2**, each connector **20** may be adhesively attached to a conventional, blade-type fuse **22**. To do this, the release liner **54** is first removed from the adhesive layer **52** and discarded. Next, the adhesive layer **52** is pressed against one side of a fuse leg **56**. The connector **20** is then folded over the end of the leg **56** and onto the opposite side thereof.

The soldered end **58** of the connector should now extend about ¼" above the top of the fuse **22** to reduce the potential for binding in the fuse box. If this ¼" extension does not exist, the connector **20** may be readily repositioned to obtain it by pealing the connector from the fuse **22** and repeating the steps outlined above. Should the fuse **22** ever require replacement, the connector **20** need only be pealed from the old fuse and transferred to a new one.

To install the simulated alarm **10** in an automobile, for example, the positive lead **16** is secured to a fuse **22** which is always energized or "hot" regardless of whether the automobile's ignition switch is opened or closed such as the dome light fuse or the hazard warning light fuse. The negative lead **18**, on the other hand, is preferably secured to a fuse which selectively receives electrical current through the ignition switch like the windshield wiper fuse. Once the connectors **20** are attached to two different fuses **22** as described, the fuses may be reinstalled in their original positions in the automobile's fuse box.

If the fuses are properly selected, the simulated alarm **10** is now armed and ready to operate for as long as the electrical current is provided from a suitable source, typically a 12-volt: storage battery. Opening the ignition switch energizes the LED **12** causing it to blink or flash since lead **16** is "hot" and lead **18** is connected to ground. When the ignition switch is closed, however, the LED **12** is deenergized since both of the leads **16** and **18** are now "hot" thereby preventing electrical current flow through the LED. When the LED **12** energized, it is estimated that drain on the current source is less than 1/100 of that required to operate a standard automobile clock.

While the invention has been described with a high degree of particularity, it will be appreciated by those skilled in the art that numerous modifications and substitutions may be made thereto. Therefore, it is to be understood that the present invention is not limited to the sole embodiment described above, but encompasses any and all embodiments within the scope of the following claims.

We claim:

1. A simulated vehicle alarm, comprising:

a housing having opposed, first and second ends and a bore connecting said first and second ends;

a light-emitting diode mounted in said bore adjacent said first end of said housing so that its light output is directed externally of said housing;

a pair of electrically conductive leads connected to said light-emitting diode, said leads extending from said bore adjacent said second end of said housing; and,

a pair of electrical connectors each being attached, respectively, to one of said electrically conductive leads, each of said electrical connectors including a strip of metallic foil having an adhesive layer on one side thereof.

2. The simulated vehicle alarm according to claim **1** wherein said housing is formed of an electrically insulative material.

3. The simulated vehicle alarm according to claim **1** wherein said light-emitting diode includes means to produce intermittent flashing.

4. The simulated vehicle alarm according to claim **1** further comprising a strip of double-sided foam tape secured to one side of the housing for adhesively mounting said simulated vehicle alarm upon a supporting surface.

5. The simulated vehicle alarm according to claim **1** further comprising a clip for receiving said light-emitting diode and mounting such within said bore, said clip having a shoulder for retaining a portion of said light-emitting diode on the exterior of said housing.

6. The simulated vehicle alarm according to claim **1** further comprising a protective sleeve of heat-shrink tubing secured about said pair of electrically conductive leads adjacent said light-emitting diode.

7. The simulated vehicle alarm according to claim **1** further comprising a resilient grommet secured within said bore adjacent said second end of said housing, said grommet having a central opening for the passage of said pair of electrically conductive leads.

8. A simulated vehicle alarm, comprising:

a housing formed of an electrically insulative material;

a light-emitting diode secured to said housing;

a pair of electrically conductive leads connected to said light-emitting diode;

a pair of electrical connectors each being attached, respectively, to the free end of one of said electrically conductive leads, each of said electrical connectors including a strip of metallic foil having a first adhesive layer on one side thereof, said first adhesive layer being covered by a first release liner; and,

a strip of double-sided foam tape for adhesively mounting said simulated vehicle alarm upon a supporting surface,

said tape having a second adhesive layer secured to one side of said housing and a third adhesive layer remote therefrom, said third adhesive layer being covered by a second release liner.

9. A simulated vehicle alarm, comprising:

a housing formed of an electrically insulative material, said housing having opposed, first and second ends and a bore connecting said first and second ends;

a light-emitting diode having means to produce intermittent flashing mounted in said bore adjacent said first end of said housing so that its light output is directed externally of said housing;

a pair of electrically conductive leads connected to said light-emitting diode and extending from said bore adjacent said second end of said housing;

a pair of electrical connectors each being attached, respectively, to the free end of one of said electrically conductive leads, each of said electrical connectors including a strip of metallic foil having a first adhesive layer on one side thereof, said first adhesive layer being covered by a first release liner; and,

a strip of double-sided foam tape for adhesively mounting said simulated vehicle alarm upon a supporting surface, said tape having a second adhesive layer secured to one side of said housing and a third adhesive layer remote therefrom, said third adhesive layer being covered by a second release liner.

10. The simulated vehicle alarm according to claim **9** further comprising a clip for receiving said light-emitting diode and mounting such within said bore, said clip having a shoulder for retaining a portion of said light-emitting diode on the exterior of said housing.

11. The simulated vehicle alarm according to claim **9** further comprising a protective sleeve of heat-shrink tubing secured about said pair of electrically conductive leads adjacent said light-emitting diode.

12. The simulated vehicle alarm according to claim **9** further comprising a resilient grommet secured within said bore adjacent said second end of said housing, said grommet having a central opening for the passage of said pair of electrically conductive leads.

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